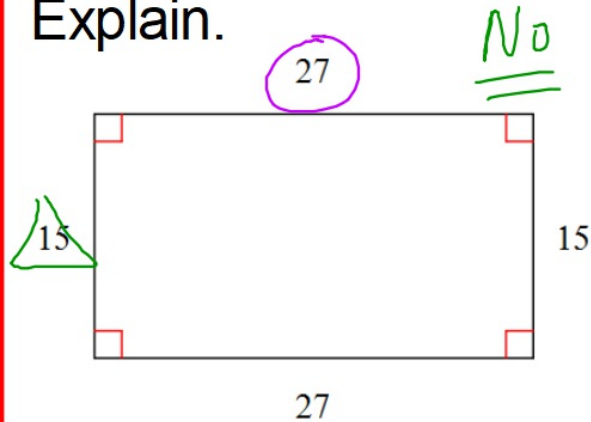
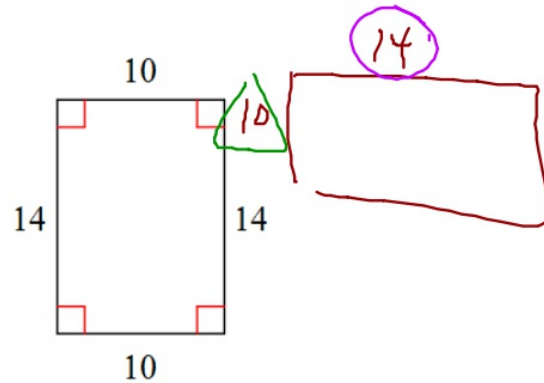


Welcome back and happy new year! Warm up in notes:

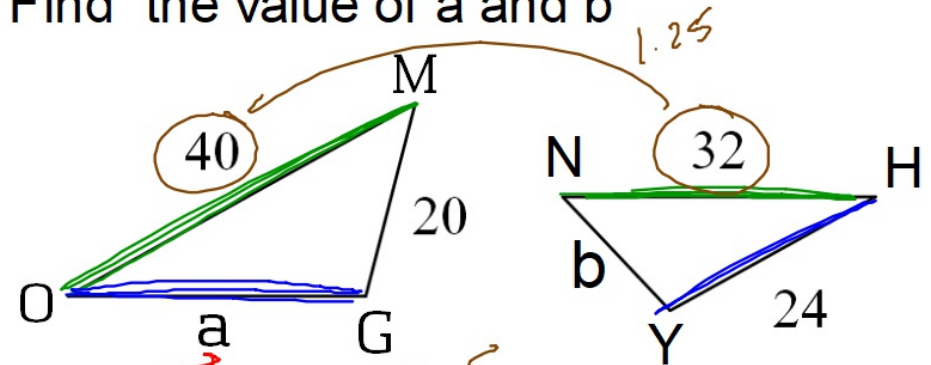
1. Are these figures "similar"?
Explain.



No



2. $\triangle OMG$ and $\triangle HNY$ are similar.
Find the value of a and b



$$\frac{40}{a} \neq \frac{32}{24}$$

$$32a = 960$$

$$a = 30$$

What do we learn this quarter?

- Similarity
- Trigonometry and its applications
- Area, Volume, Surface Area, 3D
- Circles



Supply boxes

- keep them clean
- boxes/rulers/staplers are numbered. keep them orderly
- get and return markers, etc. if needed
- each box should have:
 - 4 numbered rulers
 - 2 scissors
 - 2 glue sticks
 - 1 stapler
 - 1 tape roll*

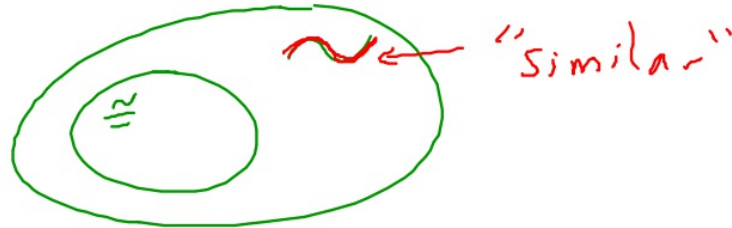
ALSO: use your assigned calc please



Notes

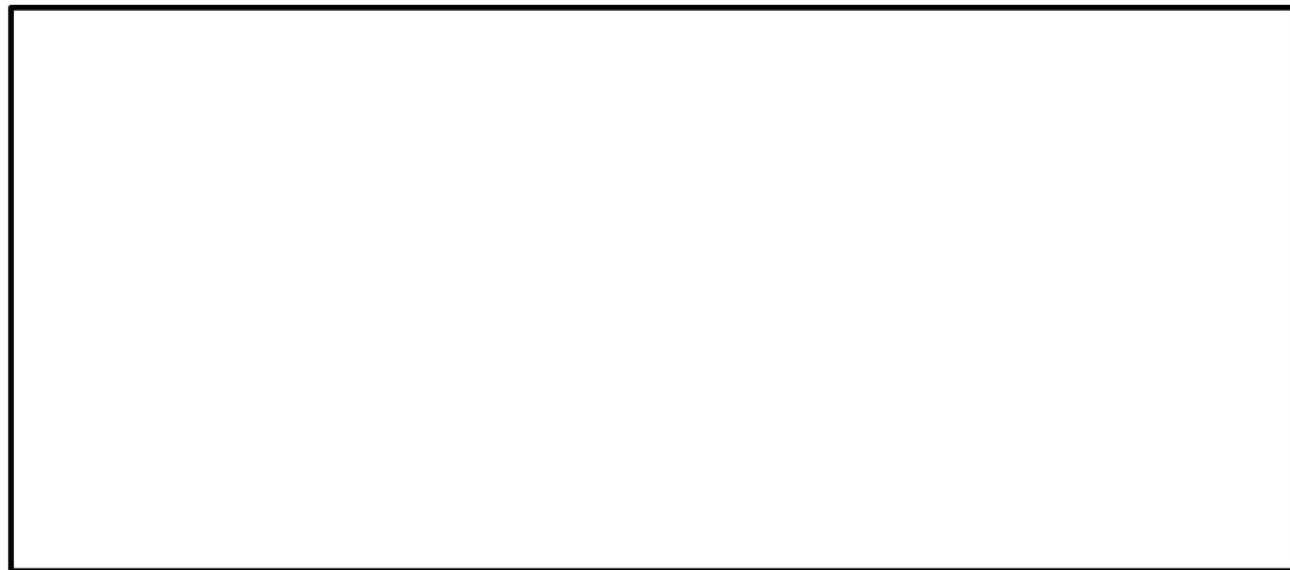
Similarity

Similar figures have the same shape, but can differ in size



Your draft for a mural is a rectangle that measures 12" by 8".
The wall on which you will paint the real mural measures 120" by 80"

If the draft required 2 tubes of paint, how many tubes of paint will the real mural require?



$$\frac{120''}{12''} = 10$$

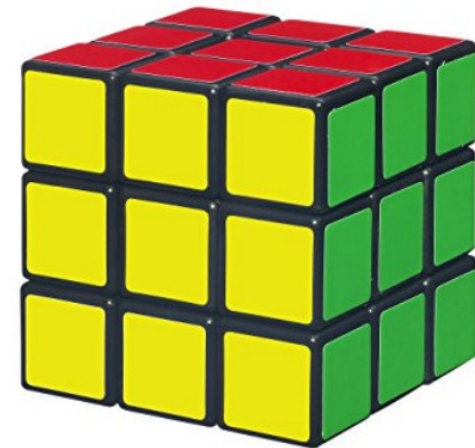
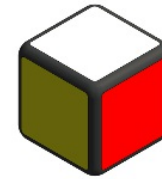
linear
Scale

10^2

100 (area Scale)



Linear Scale factor : k
Area Scale factor : k^2
Volume Scale factor : k^3



If a wallet size photo measures 2" x 2.5", and it takes 16 wallet photos to cover the original portrait, what are the dimensions of the original portrait?



2" x 4

2.5" x 4

8" x 10"

Area scale: 16
Linear Scale: 4 $\sqrt{16}$



How are similar figures made?

TRANSFORMATIONS

non-rigid motion

translations

rotations

reflections

Rigid Motions

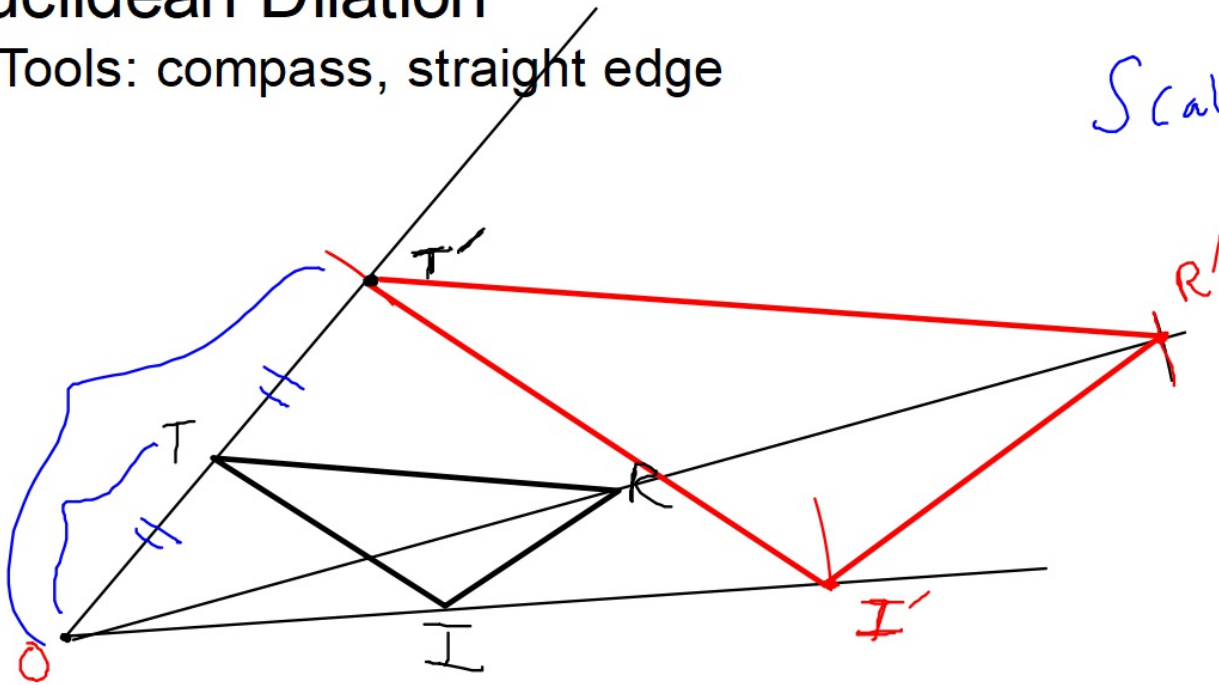
dilation

a transformation where a figure is enlarged or reduced by a scale factor around a center point

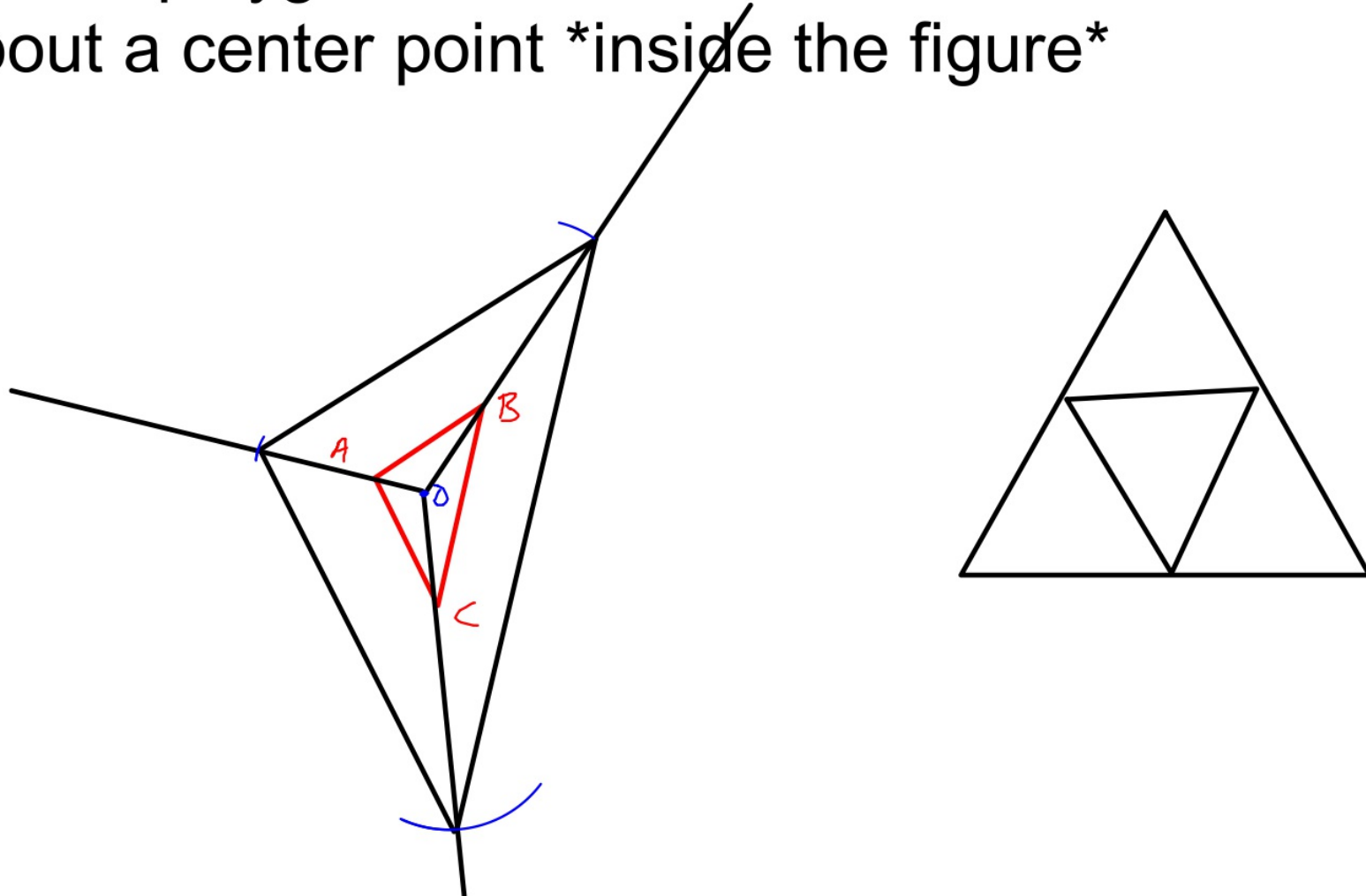
Euclidean Dilation

Tools: compass, straight edge

Scale factor:
2



draw a polygon, then dilate it with a scale factor of 3 about a center point *inside the figure*



Coordinate Dilation

Centered about origin, scale factor k : $(x,y) \rightarrow (kx, ky)$

Not centered about origin: ???

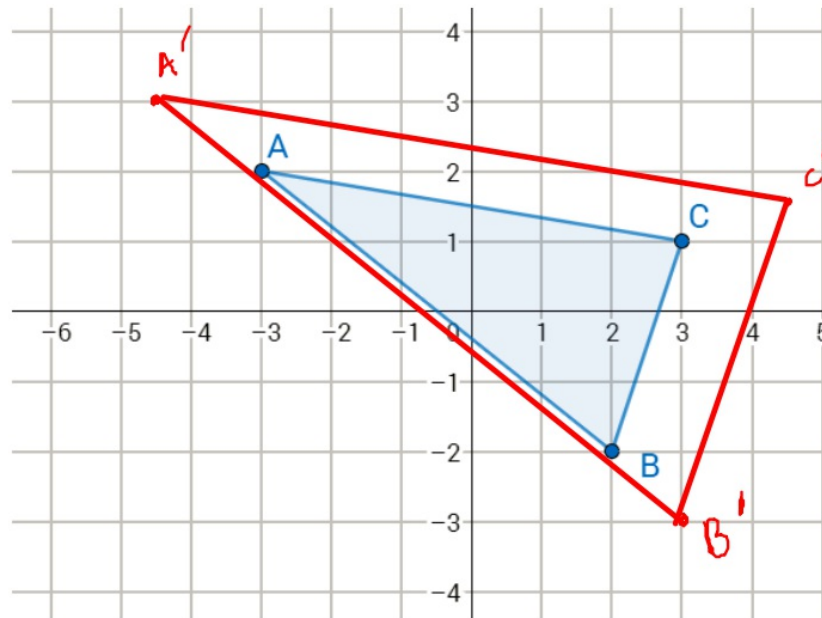


Triangle ABC has vertices $A(-3,2)$, $B(2,-2)$ and $C(3,1)$

Dilate $\triangle ABC$ about the origin with a scale factor 1.5.

mark as $\triangle A'B'C'$.

$$\begin{aligned} & \times 1.5 \\ A(-3,2) & \rightarrow (-4.5,3)A' \\ B(2,-2) & \rightarrow (3,-3)B' \\ C(3,1) & \rightarrow (4.5,1.5)C' \end{aligned}$$



Important observation:
Dilations preserve angle measure

What does this rule do?

ex $(x,y) \rightarrow (3x+5, 3y-6)$

dilate by 3, about origin

right 5, down 6

Homework

p. 255 #1, 4, 10

~~p. 260 #7-11~~